ORMA: A Semi-automatic Tool 
for Online Reputation Monitoring in Twitter

Jorge Carrillo-de-Albornoz, Enrique Amigó, Damiano Spina, and Julio Gonzalo

UNED NLP & IR Group
Madrid, Spain
{jcalbornoz,enrique,damiano,julio}@lsi.uned.es
http://nlp.uned.es

Abstract. We present a semi-automatic tool that assists experts in their
daily work of monitoring the reputation of entities—companies, organi-
zations or public figures—in Twitter. The tool automatically annotates
tweets for relevance (Is the tweet about the entity?), reputational po-
ularity (Does the tweet convey positive or negative implications for the
reputation of the entity?), groups tweets in topics and display topics in
descending order of relevance from a reputational perspective. The in-
terface helps the user to understand the content being analyzed and also
to produce a manually annotated version of the data starting from the
output of the automatic annotation processes. A demo is available at:
http://nlp.uned.es/orma/

Keywords: Online Reputation Monitoring, Social Media, Twitter.

1 The Task of Online Reputation Monitoring in Twitter

The rise of social media brought serious concerns to companies, organizations,
and public figures on what is said about them online; one of the main reasons is
that negative mentions may affect businesses or careers. Monitoring online rep-
utation has therefore become a necessity. An online reputation analyst typically
has to perform at least the following tasks: given a stream of texts containing
a potential mention to a company as input, (i) filtering out tweets that are not
related to the entity of interest, (ii) determining the polarity (positive, neutral
or negative) of the related tweets, (iii) clustering the strongly related tweets in
topics, and (iv) assigning a relative priority to the clusters, in terms of whether
a topic may damage the reputation of the entity.

Figure 1 describes the main steps carried out during the annotation process
for Online Reputation Monitoring. The process starts selecting one of the entities
assigned to the expert. In the system, each entity has a list of tweets that the
expert has to annotate manually. The expert processes tweets sequentially: first,
she decides whether the tweet does refer to the entity of interest or not. If the
tweet is unrelated to the entity, the annotation process for the tweet finishes
and the expert continues with the next tweet in the list. Otherwise, the polarity
and topic annotations follow. Polarity annotation consists in deciding whether
the tweet may affect positively or negatively to the reputation of the entity.
Topic annotation consists of identifying the aspects and events related to the entity that the tweet refers to. If the tweet refers to an already identified topic, the tweet is assigned to it. Otherwise, the expert defines a new topic. A topic receives a label that summarizes what the topic is about, and it is also classified in a priority scale (Alert, Medium or Low in our tool). When the tweet is assigned to a topic, the annotation of the current tweet is finished.

2 Architecture and Implementation

Our Online Reputation Monitoring Assistant (ORMA) aims to assist the daily work of reputation experts, helping them to manually process the data more efficiently.

Figure 2 shows the architecture of the ORMA demo. The system is deployed into two independent elements: the Web Client and the Server. The user interface permits the user to manually label tweets about an entity of interest, following the annotation process described above. To reduce the effort of experts, the system also proposes different automatic labels for each input data, with a confidence score indicating how trustable these labels are. The input data of the demo are tweets about different entities in both English and Spanish.

The server element processes the tweets of a given entity and proposes labels for the four subtasks. The tweets are processed in the Tweet Labeler using the algorithms described in [3,5,4,2]. The Tweet Labeler is divided in four components, which address each of the reputation monitoring subtasks. Each component of the Tweet Labeler can be implemented using one or multiple algorithms. The labeled tweets are then analyzed with the Confidence Score Estimator. For each subtask, this module analyzes the output of the different algorithms and determines a confidence score representing the degree of certainty of the system for the proposed labels. This score should be considered by the experts as a threshold that determines which tweets can be labeled automatically and which tweets need to be revised. The output of this element is stored in the database that is accessed by the user interface.